

an effort to clarify this for the Examiner, Figure 5 has been amended by adding reference numerals 90 and 92 for the valve discs shown in Figure 4.

OBJECTION TO THE SPECIFICATION

The disclosure is objected to because of various informalities. The specification has been amended to correct "chord 116" by changing it to "chord "114".

The claims have been amended to delete the term "pressure valve" and the specification has been amended to include the terms "low speed valve" and "mid/high speed valve".

Regarding the specification on Page 5, Figure 6 clearly illustrates the main disc in contact with the piston. In order to clarify this issue, Applicant amended Page 5 to read "the piston or the valve body". The "entire stack of valve discs" has been amended to read the "entire plurality of valve discs". Regarding the term "crescent shape" Applicant agrees that this is somewhat misleading but so is the term "hemisphere" since this defines half of a circle which is not the shape of the portion which is removed. Applicant has deleted the description of the shape of the removed portion.

OBJECTION TO THE CLAIMS

Claims 4 and 5 are objected to for various informalities. The claims have been amended to overcome the objection. Withdrawal of the objection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 112

Claims 4 and 6 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 4 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. The claims have been amended to overcome the rejection. Regarding "said first and second valve disc" in the last two lines of Claim 4, the antecedent basis is in the paragraph beginning "a low speed valve".

REJECTION UNDER 35 U.S.C. § 103

Claims 1-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Furuya et al., U.S. Pat. No. 5,042,624 in view of Tanaka, U.S. Pat. No. 5,529,154 and Yamaura et al., U.S. Pat. No. 4,964,493. Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamaura et al. in view of Tanaka. As clearly shown in Figure 3 of Furuya et al., disc valve 4c is comprised of two valve discs and thus one valve disc of disc valve 4e is adjacent body 4f but the second valve disc 4d is not adjacent the valve disc of disc valve 4e that is adjacent body 4f, a second valve disc of disc valve 4e is disposed between these two components. Regarding Tanaka, it discloses a second disc 19 with an outer edge 19a where the outer edge 19a comprises a pair of cutout sections in Figure 2, four cutout sections in Figure 7a and two cutout sections in Figure 7b. Claims 1, 4 and 6 have been amended to define the second

valve disc as having an outer edge defined by an outer circular edge truncated only by a single outer chordal edge. Nothing in Tanaka suggests the use of a single chordal edge truncating an outer circular edge. Yamaura et al. defines the second valve disc as having a plurality of chordal edges and not a single chordal edge as is now defined in amended independent Claims 1, 4 and 6.

Thus, Applicant believes independent Claims 1, 4 and 6, as amended, patentably distinguishes over the art of record. Likewise, Claims 2 and 3 which ultimately depend from Claim 1 and Claim 5 which depends from Claim 4 are also believed to patentably distinguish over the art of record. Reconsideration of the rejection is respectfully requested.

DOUBLE PATENTING

Claims 1, 2, and 3 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 2, and 3 of co-pending Application No. 09/552,125 in view of U.S. Patent No. 5,529,154 to Tanaka and U.S. Patent No. 4,964,493 to Yamaura et al. Claims 4 and 5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 8 and 9 of co-pending Application No. 09/552,125 in view of Furuya et al. '624, U.S. Patent No. 5,529,154 to Tanaka and U.S. Patent No. 4,964,493 to Yamaura et al. Claim 6 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 14 of co-pending Application No. 09/552,125 in view of Yamaura et al. in view of Tanaka. Applicant respectfully traverses this rejection by the Examiner. The


non-statutory double patenting rejection is based on a judicially created doctrine grounded in public policy so as to prevent the unjustified or improper time wise extension of the "right to exclude". Co-pending Application No. 09/552,125 does not disclose and therefore could not claim the chordal shape of the pivot edge. Because all of the pending claims include the chordal edge limitation, these claims could not have been presented in the parent application and thus the extension of the "right to exclude" is not valid. Reconsideration of the rejection is respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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ATTACHMENT FOR SPECIFICATION AMENDMENTS

The following is a marked up version of each replacement paragraph and/or section of the specification in which underlines indicate insertions and brackets indicate deletions.

Please replace Paragraph [0009] with the following paragraph:

[0009] The present invention provides the art with a method for tuning damping forces during the transition between low speed piston velocities and high speed piston velocities in order to improve the ride and handling characteristics of the vehicle without creating harshness. The present invention provides the art with a variable orifice bleed circuit which is incorporated into the secondary valving system. The secondary valving system includes a plurality of discs secured to the piston or the valve body of the base valve assembly to close the fluid passages extending through the piston or the valve body. The plurality of discs deflect due to a pressure differential to open the fluid passages during the second stage valving. The variable orifice bleed circuit of the present invention incorporates a clipped valve disc directly adjacent the main valve disc which rests directly on the piston or the valve body. This clipped disc allows an outer circumferential portion of the main valve disc in contact with the piston to deflect prior to the deflection of the entire [stack]plurality of valve discs to provide the variable orifice bleed circuit. The clipped disc has a [crescent shaped] portion which is removed to control the deflection of the main valve disc.

Please replace Paragraph [0026] with the following paragraph:

[0026] Supporting disc 92 is an annular disc defining a centrally located bore 110 through which bolt 66 extends. The outer periphery of supporting disc 92 includes a cut away section 112 formed by clipping supporting disc 92 along a chord 114 of the circle defined by the outer periphery of supporting disc 92. The size of the clipped portion which is defined by the length of chord [116]114 determines the transitional curve between the low speed circuit and the high speed circuit for shock absorber 20.

Please replace Paragraph [0027] with the following paragraph:

[0027] During a compression stroke, fluid pressure builds up in lower working chamber 46 and fluid pressure decreases in upper working chamber 44. The increase in pressure in lower working chamber 46 causes a pressure imbalance between lower working chamber 46 and reservoir chamber 54 and compression passages 74. This pressure imbalance within passages 74 will react against variable orifice bleed disc 90 causing disc 90 to deflect along chord [116] 114 to allow fluid flow past disc 90. The pressure difference between lower working chamber 46 and reservoir chamber 54 required to cause deflection of disc 90 along chord [116] 114 will be determined by the bending stiffness of disc 90 and the radial positioning of support for disc 90 by chord [116]114 of supporting disc 92. As the fluid pressure difference continues to increase, disc 90 will deflect more allowing additional flow of fluid past disc 90. The deflection of disc 90 against the support of valve disc 92 thus operates as a low speed valve. The shape of the pressure differential vs. flow curve will be determined by the size of cut away section 112 of supporting disc 92. As the fluid

pressure differential continues to increase, the load exerted on variable orifice bleed disc 90 will be transferred to supporting disc 92 to eventually cause the deflection of supporting disc [94]92 allowing for full flow of fluid through compression valve assembly 64. The deflection of discs 90 and 92 thus operates as a mid/high speed valve.

Please replace Paragraph [0028] with the following paragraph:

[0028] Thus, the present invention provides increased low speed damping force which enhances vehicle control by having variable bleed disc 90 deflect along chord [116]114. Vehicle handling is improved as a result of transferring the inertia of the vehicle to a force applying the tire to the road. The amount of force transferred by shock absorber 20 can be tuned to meet specific vehicle performance criteria. Prior art designs cannot transfer vehicle body inertia to the tire because a damping force is not created at low velocities due to the fixed bleed orifices or notches. The present invention is a distinct advantage over the prior art systems since the low speed valving is a tunable feature.

ATTACHMENT FOR CLAIM AMENDMENTS

The following is a marked up version of amended Claims 1, 3, 4, 5 and 6 in which underlines indicates insertions and brackets indicate deletions.

1. A damper comprising:
 - a pressure tube forming a working chamber;
 - a reservoir tube disposed around said pressure tube, said reservoir tube forming a reservoir chamber between said pressure tube and said reservoir tube;
 - a base valve assembly disposed between said working chamber and said reservoir chamber for regulating flow of damping fluid in a first direction between said working chamber and said reservoir chamber, said base valve assembly comprising:
 - a valve body defining a fluid passage;
 - a first valve disc disposed adjacent said valve body for closing said fluid passage, said first valve disc having [an]a circular outside edge and a central axis;
 - a second valve disc disposed adjacent said first valve disc, said second valve disc having an outer edge defined by an outer circular edge truncated only by a singled outer chordal edge, said single outer chordal edge supporting said first valve disc at a position between said circular outside edge and said central axis of said first valve disc.

3. (Amended) The damper according to Claim 1, wherein said base valve assembly includes a [pressure valve]rebound valve assembly movable between a closed position and an open position, said [pressure valve]rebound valve assembly

regulating said flow of said damping fluid in a second direction between said working chamber and said reservoir chamber, said second direction being opposite to said first direction.

4. (Amended) A damper comprising:

a pressure tube forming a working chamber;

a piston disposed within said working chamber, said piston dividing said working chamber into an upper working chamber and a lower working chamber;

a reservoir tube disposed around said pressure tube, said [reserve]reservoir tube forming a reservoir chamber between said pressure tube and said reservoir tube;

a base valve assembly disposed between said lower working chamber and said reservoir chamber for regulating flow of damping fluid in a first direction between said lower working chamber and said reservoir chamber, said base valve assembly comprising:

a low speed valve movable between a closed position and an open position, said low speed valve including a first valve disc having an outside edge and a central axis and a second valve disc having an outer edge defined by an outer circular edge truncated only by a single outer chordal edge, said second valve disc supporting said first valve disc along [a]said single outer chordal edge at a position between said outside edge and said central axis of said first valve disc; and

a mid/high speed valve movable between a closed position and an open position, said mid/high speed valve comprising only said first and second valve [disc]discs.

5. (Amended) The damper according to Claim [8]4, wherein said base valve assembly includes a pressure valve movable between a closed position and an open position, said pressure valve regulating said flow of said damping fluid in a second direction between said lower working chamber and said reservoir chamber, said second direction being opposite to said first direction.

6. (Amended) A damper comprising;
a pressure tube forming a working chamber;
a piston disposed within said working chamber, said piston dividing said working chamber into an upper working chamber and a lower working chamber;
a piston valve assembly attached to said piston for regulating flow of damping fluid between said upper working chamber and said lower working chamber, said piston valve assembly comprising:

a low speed valve movable between a closed position and an open position, said low speed valve including a first valve disc having an outside edge and a central axis and a second valve disc having an outer edge defined by an outer circular edge truncated only by a single outer chordal edge, said second valve disc supporting said first valve disc along [a]said single outer chordal edge at a position between said outside edge and said central axis of said first valve disc; and

a mid/high speed valve movable between a closed position and an open position, said mid/high speed valve comprising only said first and second valve [disc]discs.

